Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] An x-ray tube comprising:
a body defining a vacuum tube;
a first anode rotatably mounted within the vacuum tube, said first anode having a back face and a target on a front face,
a second anode rotatably mounted within the vacuum tube, said second anode having a back face and a target on said front face, said back face of said first anode facing said back face of said second anode wherein said target of said first anode is facing away from said target of said second anode;
a first cathode mounted in said vacuum tube and facing said target of said first anode; and
a second cathode mounted in said vacuum tube and facing said target of said second anode.

[c2] The x-ray tube of claim 1 further comprising a high voltage controller connected to said first and second cathodes for controlling the operation of each of the first and second cathodes.

[c3] The x-ray tube of claim 1 further comprising said first target face being a fixed distance from said second tar-

get face.

[c4] The x-ray tube of claim 1 further comprising:
a first heat storage member mounted to said back face of said first anode; and
a second heat storage member mounted to said back face of said second anode.

[c5] The x-ray tube of claim 4 further comprising a heat conducting element mounted between and spaced a distance from said first and second heat storage members.

[c6] The x-ray tube of claim 2 further comprising simultaneous activation of said first and second cathodes.

[c7] A spiral CT scanner comprising:
a rotating gantry;
an x-ray source rotatably mounted to said gantry, said x-ray source having a first anode target facing away from a second anode target, each of said first and second anode targets having a respective cathode adjacent thereto; and
a detector mounted to said gantry opposite said x-ray source for receiving x-rays from the x-ray source.

[c8] The spiral CT scanner as claimed in claim 7 wherein said x-ray source further comprises:
a power supply; and

a cathode controller connected to said power supply and said first and second cathodes.

[c9] The spiral CT scanner as claimed in claim 7 wherein said first and second anode targets are spaced a fixed distance from each other.

[c10] The spiral CT scanner as claimed in claim 7 wherein said detector further comprises;
a first grid detector mounted to said gantry; and
a second grid detector mounted to said gantry adjacent to said first grid detector.

[c11] The spiral CT scanner as claimed in claim 7 further comprising a collimator mounted to said rotating gantry in between said x-ray source and said detector, said collimator for collimating x-ray generated by said x-ray source.

[c12] The spiral CT scanner as claimed in claim 8 further comprising simultaneous operation of said first and second cathodes.

[c13] The spiral CT scanner as claimed in claim 8 wherein said x-ray source further comprises:
a first heat storage member mounted to said back face of said first anode; and
a second heat storage member mounted to said back

face of said second anode.

[c14] The spiral CT scanner as claimed in claim 13 wherein said x-ray source further comprises a heat conducting element mounted between and spaced a distance from said first and second heat storage members.

[c15] A method of generating two x-ray beams comprising the steps of:
rotating a first anode within a vacuum tube, said first anode having a back face and a target on a front face,
rotating a second anode within the vacuum tube with said first anode, said second anode having a back face and a target on a front face, said back face of said first anode facing said back face of said second anode wherein said target of said first anode is facing away from said target of said second anode;
generating an electron beam from a first cathode mounted in said vacuum tube and facing said target face of said first anode;
generating an electron beam from a second cathode mounted in said vacuum tube and facing said target of said second anode;
focusing said first electron beam on said first anode target to generate a first x-ray beam; and
focusing said second electron beam on said second anode target to generate a second x-ray beam.

[c16] The method as claimed in claim 15 further comprising the steps of:
operating said first and second cathodes simultaneously to generate first and second x-ray beams.

[c17] The method as claimed in claim 15 further comprising the step of collimating the first and second x-ray beams into a plurality of parallel beams.

[c18] The method as claimed in claim 15 further comprising the step of maintaining a fixed distance between said first and second anode targets.

[c19] The method as claimed in claim 15 further comprising the steps of:
storing heat from said first anode using a first heat storage member mounted to said back face of said first anode; and
storing heat from said second anode using a second heat storage member mounted to said back face of said second anode.

[c20] The method of claim 19 further comprising the step of conducting heat away from said first and second heat storage members using a heat conducting element mounted between and spaced a distance from said first and second heat storage members.

[c21] The method of claim 15 further comprising the step of operating the second cathode before operation of the first cathode to generate a complete scan pattern without skipping tracks.

[c22] The method as claimed in claim 21 further comprising the steps of:
operating the second cathode on a first rotation of the anode; and
operating the first and second cathodes simultaneously after the first rotation of the anode.